

ABSTRACT

A variable reflectance mirror employing a super-twisted nematic (STN) liquid crystal cell to control reflectivity. The STN liquid crystal cell includes a layer of STN liquid crystal material formed between a pair of transparent electrodes, where a polymer alignment layer is formed over the electrodes so as to orient the STN liquid crystal material to possess a twist angle between approximately 180° and approximately 270° . A pair of crossed polarizers are respectively positioned on the outer surfaces of the front and rear plates. A layer of reflective material is further formed adjacent to the outer surface of the polarizer adjacent to the rear plate. The transparent electrodes are connected to a voltage source to apply an electrical bias across the STN liquid crystal layer, where the transmittivity of the STN liquid crystal layer to light can be varied by varying the electrical bias applied across the transparent electrodes to vary the birefringence of the STN liquid crystal layer. The degree of reflection provided by the variable reflectance mirror is adjusted by adjusting the electrical bias applied across the STN liquid crystal layer. A stacked IC control circuit is provided for controlling the electrical bias applied across the STN liquid crystal layer.